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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/591,115

08/31/2006

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EXAMINER

SINGH, PREM C

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/591,115	<b>Applicant(s)</b> DUININCK ET AL.	
	<b>Examiner</b> PREM C. SINGH	<b>Art Unit</b> 1797	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 04 December 2008.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 August 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### *Response to Amendment*

1. Applicant's response to the non-final Office action dated: 09/04/2008 is noted.

### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation

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under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 1-5 and 7-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Van Beijnum et al (WO 02/50213: US equivalent-US Patent 7,347,928). (All further references will correspond to US Patent).

4. With reference to claim 1, Beijnum discloses a process for making a base oil product, said process comprises the following steps:

(a) hydrocracking a mineral crude derived feed and obtaining an effluent (See column 7, lines 13-17);

(b) distilling the effluent from step (a) into middle distillates and a residue (See column 7, lines 17-20);

(c) separating said residue into light base oil precursor fraction [12] and heavy base oil precursor fraction [14] (See column 7, lines 21-27);

(d) reducing the pour point of heavy base oil precursor fraction [14] by catalytic dewaxing to obtain a first dewaxed oil [16] and reducing the pour point of the light base oil precursor fraction [12] by catalytic dewaxing to obtain a second dewaxed oil (See column 7, lines 30-35; column 8, lines 10-19);

(e) hydrotreating said first dewaxed oil as obtained from the catalytic dewaxing unit in step (d) to provide a hydrotreated oil (See column 7, lines 35-40; column 8, lines 15-27); and

(f) isolating from the second dewaxed oil and from the hydrotreated oil two or more base oil grades (See column 8, lines 15-27 and Table 2).

Beijnum invention also discloses that the residue in step (b) boils predominantly above 370°C (See column 4, lines 19-20). Beijnum further adds, "The cut point between hydrowax and fuels fraction is not critical for the base oil preparation." (Column 4, lines 23-25). Thus, it would have been obvious to one skilled in the art at the time of invention to modify Beijnum invention and use a cut point of 340°C as claimed and enhance the production of base oils.

5. With reference to claim 2, Beijnum invention discloses that more than 95 wt% of the residue boils above 370°C (See column 4, lines 22-24).

Beijnum invention does not specifically disclose the boiling range of combined first dewaxed oil and the second dewaxed oil, however, it would have been obvious to one skilled in the art at the time of invention to modify Beijnum invention and specify the boiling range of the combined first dewaxed oil and the second dewaxed oil for proper characterization of the finished base oil. Since Beijnum uses a cut for the residue in the claimed range, it is expected that the boiling range of the combined first dewaxed oil and the second dewaxed oil will also be in the claimed range.

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6. With reference to claim 3, Beijnum invention discloses recycle of a portion of heavy base oil precursor fraction obtained in step (c) to step (a) (See column 4, lines 39-41). Although Beijnum invention does not specifically disclose the percentage recycled, but it would have been obvious to one skilled in the art at the time of invention to modify Beijnum invention and use an appropriate percentage, including as claimed, for an effective process.

7. With reference to claims 4 and 5, Beijnum invention does not specifically disclose 10 wt% recovery point of the heavy base oil precursor fraction, however, the invention does disclose the amount of heavy base oil fraction (See column 8, lines 11-15). Thus, it would have been obvious to one skilled in the art at the time of invention to modify Beijnum invention and specify the 10 wt% recovery point of the heavy base oil fraction for its proper characterization. Since Beijnum uses a cut for the residue in the claimed range, and separates the residue in a vacuum distillation similar to the Applicant's claim, it is expected that the 10 wt% recovery point of the heavy base oil fraction should necessarily be in a range as claimed.

8. With reference to claims 7 and 8, Beijnum invention discloses the weigh hourly space velocity (WHSV) in the dewaxing step in the range of  $0.1-10 \text{ hr}^{-1}$  (See column 5, lines 50-52).

Although Beijnum invention does not specifically disclose WHSV of light and heavy base oil precursors separately, but it would have been obvious to one skilled in

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the art at the time of invention to specify the WHSV separately because WHSV for both, light and heavy base oil precursors, should necessarily be in a range disclosed by Beijnum invention.

9. With reference to claim 9, Beijnum invention does not specifically disclose the pressure in the dewaxing step separately for light and heavy oil precursors, however, the invention does disclose hydrogen pressures in the dewaxing step in a range of 10-200 bar (See column 5, lines 49-50). Thus, it would have been obvious to one skilled in the art at the time of invention to modify Beijnum invention and specify total pressures in the dewaxing of light and heavy oil precursors separately because both pressures will necessarily be in a range disclosed by Beijnum invention.

10. With reference to claim 10, Beijnum invention discloses that step (f) is conducted on a mixture of second dewaxed oil and the hydrotreated oil (See column 8, lines 15-27 and Table 2).

11. Claim 11 has all the limitations of claim 1 and uses a gas oil feed as compared to claim 1 which uses a "hydrocarbon mixture".

The limitations of claim 1 have already been discussed before.

Beijnum invention discloses that the base oils are obtained from the bottoms fraction of a fuels hydrocracking process (See column 1, lines 7-10). Beijnum invention also discloses that hydrocracker produces naphtha, kerosene, and gas oil (See column

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2, lines 32-34). Obviously, the feed to the hydrocracker should necessarily be heavier than gas oil, for example, vacuum gas oil (evidenced by Chen et al, US Patent 4,851,109: column 6, lines 45-49).

12. With reference to claims 12 and 13, Beijnum invention discloses that more than 95 wt% of the residue boils above 370°C (See column 4, lines 22-24).

Beijnum invention does not specifically disclose the boiling range of total of the hydrotreated oil and the second dewaxed oil, however, it would have been obvious to one skilled in the art at the time of invention to modify Beijnum invention and specify the boiling range of the total of the hydrotreated oil and the second dewaxed oil for proper characterization of the finished base oil. Since Beijnum uses a cut for the residue in the claimed range, it is expected that the boiling range of the total of the hydrotreated oil and the second dewaxed oil will also be in the claimed range.

13. With reference to claim 14, Beijnum invention discloses the weigh hourly space velocity (WHSV) in the dewaxing step in the range of 0.1-10 hr<sup>-1</sup> (See column 5, lines 50-52) and the hydrogen pressure in a range of 10-200 bar (See column 5, lines 49-50).

Although Beijnum invention does not specifically disclose WHSV and pressure of light and heavy base oil precursors separately, but it would have been obvious to one skilled in the art at the time of invention to specify the WHSV and pressures separately because the ranges of WHSV and hydrogen pressure disclosed by Beijnum invention



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are for both, light and heavy base oil precursors. It is to be noted that Beijnum invention uses a “blocked out mode” for light base oil precursor (See column 7, lines 30-31).

14. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Van Beijnum et al (WO 02/50213: US equivalent-US Patent 7,347,928). (All further references will correspond to US Patent) in view of Chen et al (US Patent 4,851,109).

15. With reference to claim 6, Beijnum invention does not specifically disclose adding a partly isomerized FT wax in the heavy base oil precursor.

Chen discloses a process similar to Beijnum for making a base oil product using similar feed, operating conditions and catalyst. Chen also discloses that feed can be a product from a Fischer Tropsch (FT) synthesis (See column 6, lines 20-25). Chen further discloses that integration of hydrocracking step with paraffin isomerization increases production of premium lube base stock (See column 17, lines 30-36).

Thus, it would have been obvious to one skilled in the art at the time of invention to modify Beijnum invention and add isomerized paraffin wax from FT synthesis to the heavy base oil precursor as disclosed by Chen, to enhance the production of premium lube base stock.

***Response to Arguments***

16. Applicant's arguments filed 12/04/2008 have been fully considered but they are not persuasive.

17. In the arguments on page 2 (paragraph 2), the Applicant argues that the Applicant's process is significantly different from the process taught by Van Beijnum in that the catalytic dewaxing step of the claimed process includes two parallel operated reactors that process fractions from a distillation step not taught in the Van Beijnum process.

The Applicant's argument is not persuasive because Van Beijnum discloses reducing the pour point of heavy base oil precursor fraction [14] by catalytic dewaxing to obtain a first dewaxed oil [16] and reducing the pour point of the light base oil precursor fraction [12] by catalytic dewaxing to obtain a second dewaxed oil (See figure 1; column 7, lines 30-35; column 8, lines 10-19).

18. In conclusion, the claimed invention is *prima facie* obvious over Van Beijnum in view of Chen.

***Conclusion***

19. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to PREM C. SINGH whose telephone number is (571)272-6381. The examiner can normally be reached on 7:00 AM to 3:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on 571-272-1444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

PS 021209

/Glenn A Caldarola/  
Acting SPE of Art Unit 1797